

## DISH WASHING MACHINE INCLUDING DISTRIBUTOR

### CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the priority benefit of Korean Patent Application No. 10-2015-0146848, filed on Oct. 21, 2015 in the Korean Intellectual Property Office, the disclosure of which is incorporated herein by reference in its entirety.

### BACKGROUND

[0002] 1. Field

[0003] Embodiments of the disclosure relate to a dish washing machine including a distributor for selectively supplying washing water to jet nozzles.

[0004] 2. Description of the Related Art

[0005] A dish washing machine is a home appliance which includes a body provided with a washing tub, a basket for accommodating dishes, a sump for storing washing water, jet nozzles for spraying the washing water, and a pump for supplying the washing water in the sump to the jet nozzles and washes dishes by spraying washing water to dishes at a high pressure.

[0006] Generally, dish washing machines each employ a rotor-type jet structure having a rotating jet nozzle. A rotating nozzle jets washing water while rotating due to a water pressure. Since such a rotating nozzle jets the washing water only within a range limited by a radius of rotation, an area to which the washing water is not jetted may occur. Accordingly, to prevent the area to which the washing water is not jetted from occurring, so-called linear type jet structures have been provided. Linear type jet structures each include a fixed nozzle fixed to one side of a washing tub and a vane which moves inside the washing tub and deflects washing water jetted from the fixed nozzle toward dishes, thereby jetting the washing water to all areas of the washing tub according to the movement of a deflection plate.

[0007] In this case, to separately wash a partial area of the washing tub, it is necessary to selectively supply washing water to each of the jet nozzles. For this, a dish washing machine may include a distributor. The distributor may be, for example, positioned outside a housing of the pump.

[0008] When the distributor is positioned outside the housing of the pump, the distributor may include an inlet into which washing water pumped by the pump flows and a plurality of outlets through which washing water which flows in is discharged. In this case, the housing of the distributor may include a plurality of opening and closing members capable of opening and closing the plurality of outlets, and the plurality of opening and closing members may selectively open and close the plurality of outlets using torque of a motor of the distributor. Accordingly, the washing water may be selectively supplied to each of the plurality of jet nozzles.

### SUMMARY

[0009] Therefore, it is an aspect of the disclosure to provide a dish washing machine including a distributor of washing water which minimizes pressure loss of the washing water and increases space utilization.

[0010] It is another aspect of the disclosure to improve a water circulation system of a dish washing machine. That is,

for less consumption of energy and water, an amount of water supplied to the water circulation system and pressure loss occurring at the water circulation system may be reduced.

[0011] Additional aspects of the disclosure will be set forth in part in the description which follows and, in part, will be apparent from the description or may be learned by practice of the disclosure.

[0012] In accordance with an aspect of the disclosure, a dish washing machine may include a body, a plurality of jet nozzles which jet washing water, a sump which stores washing water, a pump which comprises a pumping motor pumping the washing water stored in the sump and a housing comprising a plurality of outlets, and a distributor which distributes the washing water pumped by the pump to the plurality of jet nozzles through the plurality of outlets. The distributor may include at least one opening and closing member configured to be rotatable in the housing of the pump to selectively open and close the plurality of outlets, and a distributor motor which rotates the at least one opening and closing member about a motor shaft which faces a direction different from a direction which a motor shaft of the pumping motor faces.

[0013] At least one of the plurality of outlets may be open in a longitudinal direction of the housing.

[0014] At least one of the plurality of outlets may be open in an upward direction of the housing.

[0015] At least one of the plurality of outlets may be open in a downward direction by an angle from 40 degrees to 50 degrees in a longitudinal direction of the housing.

[0016] A direction of the motor shaft which faces the direction different from an axial direction of the pumping motor may be identical to a longitudinal direction of the housing of the pump.

[0017] A direction of the motor shaft which faces the direction different from an axial direction of the pumping motor may be perpendicular or approximately perpendicular to the axial direction of the pumping motor.

[0018] The distributor may be detachably coupled with one longitudinal end portion of the housing.

[0019] When there are a plurality of such at least one opening and closing member, a first opening and closing member of the opening and closing members may be provided at one end of the motor shaft and a second opening and closing member may be provided between both ends of the motor shaft.

[0020] The opening and closing member may comprise at least one ridge and at least one valley, and wherein according to rotation of the motor shaft, one of the plurality of outlets may be closed by the at least one ridge and another of the plurality of outlets may be opened by the at least one valley.

[0021] The opening and closing member may comprise a cap which comes into close contact with a hole of the at least one outlet and cuts off leakage of the washing water when at least one of the plurality of outlets is closed by the opening and closing member.

[0022] The opening and closing member may comprise at least one ridge and at least one valley, and the at least one ridge may comprise a guide surface which guides washing water.

[0023] The opening and closing member may comprise a first blade and a second blade and closes at least one of the plurality of outlets using the first blade or the second blade.